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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the smoke-dried foodstuffs by which smoke-dried processing was packed and carried out with the food-grade casing film and this food-grade casing film which are used when packing dairy products, such as meat products, such as a ham sausage, and a cheese head, and carrying out smoke-dried processing. Smoke-dried processing is not performed but it is related with the dry sausage (mortadella) and dry ham which were packed with the dry sausage (mortadella) to which the moisture inside a ham sausage is made to emit moderately, the food-grade casing film used for a dry ham, and this food-grade casing film.

[0002]

[Description of the Prior Art]In order to perform cooking by smoking treatment, such as meat processing, such as a ham sausage, and a cheese head, or heat treatment, the collagen casing which uses as a raw material natural casings, such as intestines of an animal, the fibrous casing which uses viscose as the main raw material, and collagen is used from the former. It has the advantage that smoking treatment is possible for these casings, and the effect is very large again.

[0003]However, shape and intensity of a natural casing are uneven, When filling up a casing with that it is very difficult for a short time to supply a lot of raw materials, that a casing film has intensity spots and a very weak portion exists, and packing, there are problems, like that a casing may carry out bag tearing and may become restoration difficulty and also a charging efficiency is bad.

[0004]A fibrous casing and collagen casing, Since the permeability of a steam is excessive, the weight loss of packing is large, When the permeability of oxygen carries out long term storage greatly, there is an unpleasant smell which there being problems, such as putrefaction of

packing and generating of mold, and a casing have, and since tactile feeling is hard, in the case of use, there are problems, like dipping in water etc. needs to be pretreated.

[0005]On the other hand, a polyamide film like the polycapramide currently used as a synthetic plastics casing, or polyhexamethylene adipamide, Under high humidity, it excels also in that some smoking treatment effects are acquired, that tensile breaking strength is strong, that impact strength is large, that dimensional stability is good, and oxygen interception nature. Although there is an advantage, such as making the mothball of contents possible, another side and the smoke-dried effects are dramatically small compared with a fibrous casing, and insufficient as a casing for smoking.

[0006]

[Problem(s) to be Solved by the Invention]This invention is made in order to solve the above-mentioned problem. That is, the purpose of this invention is as follows.

Perform smoking treatment equivalent to a natural casing or a fibrous casing, and have good smoke-dried scents, smoke-dried colors, and smoking flavor.

Provide the smoke-dried foodstuffs by which the casing was carried out with the casing film for smoking and this film of the heat contraction nature which is permeability moderately, and is impermeableness moderately to oxygen on the other hand, and has high intensity to a steam.

[0007]. It is searched for that this invention makes internal moisture emit moderately. It aims at providing the foodstuffs by which the casing was carried out to the steam usable to the dry sausage and dry ham which do not perform smoking treatment with the food-grade casing film and this film which are permeability moderately and have impermeableness moderately to oxygen.

[0008]As a result of repeating research that these purposes should be realized, by mixing thermoplastics and a polyvinyl pyrrolidone, this invention persons have permeability moderately to a steam, and are impermeableness moderately to oxygen, Simultaneously, by smoking treatment, it finds out that the food-grade casing film which can hold good smoke-dried scents, smoke-dried colors, and smoking flavor is obtained, and this invention is reached.

[0009]

[Means for Solving the Problem]This invention is a food-grade casing film consisting of a mixture of a polyvinyl pyrrolidone and thermoplastics at least. As this thermoplastics, polyamide resin is preferred. As for the mixing ratio of polyamide resin and a polyvinyl pyrrolidone, it is preferred that it is 50-99:50-1 in a weight ratio. It is still more preferred to set the mixing ratio of polyamide resin and a polyvinyl pyrrolidone to 80-99:20-1 by a weight ratio. Copolymerization resin of nylon 6 or nylon 6, and nylon 6.6 is preferred as polyamide resin.

These food-grade casing films can be used for smoke-dried foodstuffs, and can be used for a dry sausage (mortadella) and dry hams. This invention provides foodstuffs packed using this food-grade casing film.

[0010]A main smoke component of smoking consists of phenols, alcohols, organic acid, and a carbonyl compound, and these compounds have compatibility with water. For this reason, in order to make a smoke component penetrate effectively, it is necessary to have the characteristic of a casing having compatibility with water, and being plasticized more with water, and making water and a steam penetrating easily.

[0011]In order to carry out smoking treatment of the casing packing more effectively, although it is necessary to make more casings penetrate, moisture containing smoke-dried scents and a taste component, For that purpose, it is important that moisture which contains many smoke-dried scents and taste components by the casing surface is adsorbed, and you dissolve it, and make it quickly spread by a film inner surface.

[0012]When moisture of a casing and penetrability power of a steam are too large, on the other hand, smoking treatment, Moisture in casing packing will be superfluously emitted to the casing exterior in process in series, such as cooking and cooling, weight of packing will decrease, the last package product is made to produce wrinkles, and a problem of reducing a yield is induced further.

[0013]This invention is a food-grade casing film consisting of a mixture of a polyvinyl pyrrolidone and thermoplastics at least. This film has moderate permeability to a steam, and is impermeableness moderately to oxygen, Since smoke-dried scents and moisture containing a taste component are adsorbed and are dissolved simultaneously, even if it is suitable for smoke-dried processing and also performs casing processing of clip processing, shearing processing, contents restoration, etc., it has the intensity which can fully be borne.

[0014]In a dry sausage and a dry ham which do not perform smoking treatment, it is important to make internal moisture emit moderately. For the purpose, from a steam, it is permeability moderately and what has impermeableness moderately is called for from oxygen. A casing film which consists of a mixture of a polyvinyl pyrrolidone and thermoplastics fills this demand.

[0015]Especially as thermoplastics, polyamide resin is preferred. As for the mixing ratio of this polyamide resin and polyvinyl pyrrolidone, 50-99:50-1 are preferred at a weight ratio, and its thing mixed at a rate of 80-99:20-1 is still more preferred. As a film for casings, a thing of a 5-90-micrometer-thick monolayer is preferred.

[0016]To a steam, such a casing film of composition is permeability moderately, and has impermeableness moderately to oxygen. And internal moisture can be made to emit moderately by packing contents with this film. In smoking treatment, make moisture containing smoke-dried scents and a taste component adsorb, make it dissolve, make it permeate, and the last package product is not made to produce wrinkles, without producing weight loss of

contents, and also tensile breaking strength and impact strength are strong, and it excels also in dimensional stability or oxygen interception nature.

[0017]A polyvinyl pyrrolidone used for this invention is the cross linked polymer of N-vinyl pyrrolidone, and this can absorb moisture to about 1 to 30 times of the amount of prudence, and can emit moisture which absorbed water. And absorptivity stable also to a salt water solution of various concentration is shown, and wide range PH field also shows stable absorptivity.

[0018]A salt is moderately added to casing packing, and the atmosphere environment of smoking treatment can turn into acidic environment or alkaline environment according to a processing condition. Therefore, the characteristic which the above-mentioned polyvinyl pyrrolidone has becomes important and indispensable in this invention. A polyacrylate system water absorption agent to which water absorption capacity falls remarkably under environment which is neither a salt water solution nor neutrality is not suitable for smoking treatment.

[0019]As polyamide resin, copolyamides and these mixtures of copolyamide of nylon 6, nylon 6, and nylon 6 .6, Nylon 11, Nylon 12, and nylon 6 and Nylon 12 can be used conveniently. Especially, copolyamide of nylon 6 or nylon 6, and nylon 6 .6 is preferred.

[0020]A smoke-dried food-grade casing film of this invention can be obtained by carrying out biaxial stretching of the mixture of a polyvinyl pyrrolidone and thermoplastics melt extruding and in all directions [ each / about 1.5 to 3.5 times of ], for example. This smoke-dried food-grade casing film is flexible, and its feel is soft.

[0021]Next, if this casing film is immersed for 30 seconds during heat-treatment, for example, 95 \*\* hot water, it has the characteristic which contracts every direction 10 to 30%. Therefore, also after cooling smoke-dried articles, a casing can be exactly stuck to contents, and a pin without wrinkles and the stretched last package product can be provided.

[0022]In order to manufacture smoke-dried foodstuffs of this invention, said tube shape casing is filled up with foodstuffs, and smoking treatment is performed by a usual method. 20-100 \*\* of smoking treatment temperature is 50-90 \*\* preferably. This smoking treatment can be performed the meantime or after that before heat treatment under existence of water or a steam. Dry heat treatment is performed at 50-80 \*\* before a steam and smoking treatment, and after a steam and smoking treatment, chilled water is sprayed and it cools. Temperature under smoking treatment and heat treatment is chosen so that the predetermined degree of cooking and smoke-dried scents may be given to a final product.

[0023]Smoke-dried foodstuffs by which the casing was carried out with a food-grade casing film of this invention do not make foodstuffs which maintained weight of foodstuffs with which it filled up also after prolonged preservation, and showed tolerance to fungi like mold and in which after cooling was packed produce wrinkles. As a result, a product outstanding on a scent and appearance is obtained.

[0024]To a steam, a smoke-dried food-grade casing film of this invention is permeability moderately, and. Since it has the feature of being moderate impermeableness, to oxygen, smoke-dried processing is not performed but it is suitable also for use as a dry sausage (mortadella) and a casing film for dry hams which make moisture of meat with which it only filled up emit to the exterior moderately. That is, said tube shape casing is filled up with foodstuffs, and a drying process is performed by a usual method. 5-50 \*\* of dry treatment temperature is preferred.

[0025]

[Embodiment of the Invention]Hereafter, this invention is explained based on an example.

[Work example 1]96 % of the weight of 85:15 copolymerization resin (density 1.14, melting point of 198 \*\*) of nylon 6 and nylon 6 .6, It lets the melting extrusion machine with which the tip exit of the dice attached the metallic mold of the circle configuration for what blended 4 % of the weight (the product made by ISP: polyp lath boss XL10) of N-vinyl-pyrrolidone cross linked polymer pass, The cylindrical film was molded, it extended 2.5 times as much length and horizontally [ 3.0 times as many ], and the casing which comprises a cylindrical film (the folding width of 60 mm and 25 micrometers in thickness) was obtained. When this casing was immersed among 30-second hot water at 95 \*\*, contraction was 25% of length, and 30% of width.

[0026]

[Work example 2]90 % of the weight of 85:15 copolymerization resin (density 1.14, melting point of 198 \*\*) of nylon 6 and nylon 6 .6, It lets the melting extrusion machine with which the tip exit attached the metallic mold of the circle configuration for what blended 10 % of the weight of N-vinyl-pyrrolidone cross linked polymer used in Example 1 pass, The cylindrical film was molded, it extended 2.5 times as much length and horizontally [ 3.0 times as many ], and the casing which comprises a cylindrical film (the folding width of 60 mm and 25 micrometers in thickness) was obtained. Contraction at the time of immersion among 95 \*\*x 30-second hot water of this casing was 25% of length, and 30% of width.

[0027]

[Work example 3]80 % of the weight of 85:15 copolymerization resin (the density 1.14, melting point of 198 \*\*) of nylon 6 and nylon 6 .6, It lets the melting extrusion machine with which the tip exit attached the metallic mold of the circle configuration for what blended 20 % of the weight of N-vinyl-pyrrolidone cross linked polymer used in Example 1 pass, The cylindrical film was molded, every direction was extended 2.5 times, and the casing which comprises a cylindrical film (the folding width of 60 mm and 25 micrometers in thickness) was obtained. Contraction at the time of immersion among 95 \*\*x 30-second hot water of this casing was 20% of every direction.

[0028]

[Work example 4]It lets the melting extrusion machine with which the tip exit attached the

metallic mold of the circle configuration for what blended with 96 % of the weight of nylon 6 resin (the density 1.14, melting point of 220 \*\*) 4 % of the weight of N-vinyl-pyrrolidone cross linked polymer used in Example 1 pass, The cylindrical film was molded, it extended 2.5 times as much length and horizontally [ 3.0 times as many ], and the casing which comprises a cylindrical film (the folding width of 60 mm and 25 micrometers in thickness) was obtained. Contraction at the time of immersion among 95 \*\*x 30-second hot water of this casing was 15% of length, and 20% of width.

[0029]

[Work example 5] 50 % of the weight of 85:15 copolymerization resin (the density 1.14, melting point of 198 \*\*) of nylon 6 and nylon 6 .6, It lets the melting extrusion machine with which the tip exit attached the metallic mold of the circle configuration for what blended 50 % of the weight of N-vinyl-pyrrolidone cross linked polymer used in Example 1 pass, The cylindrical film was molded, every direction was extended twice, and the casing which comprises a cylindrical film (the folding width of 60 mm and 25 micrometers in thickness) was obtained. Contraction at the time of immersion among 95 \*\*x 30-second hot water of this casing was 10% of length, and 10% of width.

[0030]

[Comparative example 1] The fibrous casing of marketing (the folding width of 90 mm and 85 micrometers in thickness) was used.

[0031]

[Comparative example 2] It let the melting extrusion machine which attached the metallic mold of the circle configuration to the tip exit for nylon 6 resin (density 1.14, melting point of 220 \*\*) pass, the cylindrical film was molded, it extended 2.5 times as much length and horizontally [ 3.0 times as many ], and the casing which comprises a cylindrical film (the folding width of 60 mm and 25 micrometers in thickness) was obtained. Contraction at the time of immersion among 95 \*\*x 30-second hot water of this casing was 15% of length, and 20% of width.

[0032]

[Smoke-dried examination] 70 % of the weight of pork minced meat, 20 % of the weight of water, 7 % of the weight of starch, and 3 % of the weight of salt were mixed, it filled up the casing of Examples 1-4 and the comparative examples 1-2 at a time with 300g of raw materials into which it cut into finely and paste state was processed, clip closure was carried out, and the following conditions performed smoke-dried processing.

\*\* aging [ ] -- 50 \*\* -- 10 minute \*\* desiccation [ ] -- 60 \*\* -- 20 minute \*\* smoked smoke injection [ ] -- 60 \*\* -- 20 minute \*\* smoked smoke opening and dry 60 \*\* 20-minute \*\* smoked smoke reclosing [ ] -- 60 \*\* -- 20 minute \*\* steam cooking [ ] -- 80 \*\* -- 20 minute \*\* cooling About 10 \*\* cooling water spraying x 8 minutes [0033]

[Drying test] 70 % of the weight of pork minced meat, 20 % of the weight of water, 7 % of the weight of starch, and 3 % of the weight of salt were mixed, it filled up the casing of Example 5

at a time with 300g of raw materials into which it cut into finely and paste state was processed, clip closure was carried out, and the following conditions performed the drying process.

\*\* aging [ ] -- 50 \*\* -- 10 minute \*\* desiccation [ ] -- 60 \*\* -- 20 minute \*\* steam cooking [ ] -- 80 \*\* -- 20 minute \*\* cooling about 10 \*\* cooling water spraying x 8-minute \*\* desiccation [ ] -- it is neglected for two months at 15 \*\* [0034]The result of having done the organoleptics of the smoke-dried foodstuffs at the time of using the casing of Examples 1-4 and the comparative example 2 by two or more specialists as ten points of ten-step evaluation of each evaluation of the aroma of the smoke-dried foodstuffs at the time of using the fibrous casing of marketing of the comparative example 1, the taste, and a color is shown in Table 1.

[Table 1]

ケーシング	香り	味	色	燻製SKINの深さ
実施例 1	8	8	7	2.0
実施例 2	9	9	7	2.0
実施例 3	9	9	8	2.2
実施例 4	8	8	7	2.0
比較例 1	10	10	10	2.5
比較例 2	5	5	4	0.5

The depth of the smoking SKIN means among front the thickness (a unit is mm) which smoke permeated the inner surface from the surface of the smoking treatment sausage, and was colored smoke-dried colors (brown).

[0035]As shown in Table 1, the casing of Examples 1-4 showed the smoking effect almost equivalent to the comparative example 1 currently used as a conventional casing for smoking, but the casing of the comparative example 2 which consists only of polyamide had the insufficient smoking effect. Examples 1-4, the comparative example 1, and the comparative example 2 -- the oxygen transmission quantity of each casing film. The amount of water vapor permeation, the amount of weight loss of the contents immediately after the smoke-dried processing using this casing film and the oxygen transmission quantity of the casing of Example 5, the amount of water vapor permeation, and the amount of weight loss of the contents two months after after a drying process were shown in Table 2.

[Table 2]

ケーシング	酸素透過量 [cc/ml.24h.atm]	水蒸気透過量 [g/ml.24h]	重量減少量 [%]		
	23℃×65%RH	40℃×90%RH	10℃×40%RH		15℃×30%RH
			燻煙直後	15日後	2ヶ月後
実施例1	45	1000	5.7	11.0	—
実施例2	45	1000	5.7	14.2	—
実施例3	55	2000以上	6.3	23.0	—
実施例4	45	1000	5.6	10.4	—
実施例5	60	2000以上	—	—	41.0
比較例1	2000以上	2000以上	6.7	42.0	—
比較例2	38	400	2.2	5.4	—

[0036]As shown in Table 2, when the casing of Examples 1-4 and the comparative example 2 was used, 15 days after had little weight loss, and there was no rhytidosis in the surface, and it was in the pin and the stretched state. When the casing of the comparative example 1 is used, 15 days afterward weight loss was carried out greatly, and mold has occurred on the surface. Commodity value was falling remarkably.

When the casing of Example 5 was used, two months afterward, there was no generating of mold in the surface on which the weight of contents decreased greatly and fine wrinkles were seen in the entire surface, and foodstuffs assumed reddish brown and were dried thoroughly.

[0037]Table 1 and 2 shows that the casing of Examples 1-4 acquired from the mixture of polyamide and a polyvinyl pyrrolidone is best as a casing for smoking in respect of oxygen transmission quantity, the amount of water vapor permeation, and weight loss. It turns out that the casing of Example 5 is a thing applicable as a casing for dry sausages.

[0038]In this invention, the thickness in particular of a film is not restricted and can be chosen arbitrarily.

[0039]

[Effect of the Invention]This invention is a food-grade casing film obtained from the mixture of a polyvinyl pyrrolidone and thermoplastics at least. This casing film is permeability moderately to a steam, and it is impermeableness moderately to oxygen. It has the feature that smoking treatment is possible and smoke-dried scents, smoke-dried colors, and smoking flavor can moreover be held. And the broad use to food-grade casings, such as smoke-dried foodstuffs, a dry ham, a dry sausage, etc. is possible for this casing film.

[Translation done.]